

## ABSTRACT OF THE INVENTION

The crystal orientations of monocrystalline semiconductor wafers may be varied by four parameters. The first parameter is the type of crystal seed used to grow the monocrystalline semiconductor ingot from which the wafers are cut. The second parameter is the angle at which the wafer is sliced from the ingot. The third parameter is the crystal plane towards which the wafer is cut. And, the fourth parameter is the position of the orientation indication feature that is used to align the wafer during processing. Different combinations of these parameters provide variations of non-standard crystal orientations of monocrystalline semiconductor wafers and semiconductor-on-insulator substrates such as silicon-on-insulator.